

MILLS (C.K.)

al

SPASMODIC TORTICOLLIS.—DIFFERENT FORMS OF  
SPASM AFFECTING THE MUSCLES OF  
THE NECK.

A CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA HOSPITAL,  
BY CHARLES K. MILLS, M.D.,  
*Neurologist to the Philadelphia Hospital; Professor of Diseases of the Mind and  
Nervous System in the Philadelphia Polyclinic.*





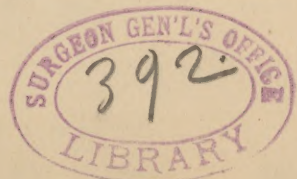


## SPASMODIC TORTICOLLIS.—DIFFERENT FORMS OF SPASM AFFECTING THE MUSCLES OF THE NECK.

A CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA HOSPITAL,  
BY CHARLES K. MILLS, M.D.,  
*Neurologist to the Philadelphia Hospital ; Professor of Diseases of the Mind and  
Nervous System in the Philadelphia Polyclinic.*

LOCAL spasmodic affections are of practical importance since many of them are curable though often difficult to cure ; and this morning the first case to which your attention will be called is one of the most interesting of these disorders—a form of spasm of the muscles supplied by the spinal accessory. Many examples of local spasmodic affections have come under my observation, among them, in addition to accessorius spasm, cases of spasm affecting the ocular muscles, the orbicular palpebrarum, and the superior auricular or attolens aurem ; general facial tic, masticatory or trigeminal spasm, and spasm of the splenius capitis. Besides these, I have, of course, seen many instances of local spasm in the limbs. Erb briefly describes several forms of spasm of individual muscles in the neck, including spasm of the obliquus capitis inferior, and of the deep muscles of the neck, besides those forms to which reference has just been made.

CASE I.—M. B., aged 24, in the Autumn of 1887, was thrown from a wagon, lighting on her head and back. She was much stunned, but was not unconscious, and walked home. From the time of this accident she often suffered severely with pain in the occipital region, more marked on the left side ; but she had no other inconvenience from her injuries until April, 1888, when now and then her head began to be drawn downward to the left, and her face upward to the right. These attacks of spasm became more and more frequent and soon almost continuous. She has been treated with medicines and counter-irritants without any





marked improvement. The spasm is brought on by walking, excitement, or by pressure in the left occipital region. She has a spot of great tenderness about one inch to the left and a little above the occipital protuberance, and pressure here will bring on the spasm or increase its violence.

With this history let us carefully examine our patient. Notice the position of her head. It is not always easy to decide upon the muscle or muscles affected in a spasm of this character. A paresis or paralysis of the muscles of one side may simulate spasm of the muscles of the other. It is of great importance, because of the possibility of surgical interference, to decide what muscles and nerves are affected. The spasm here seems to be in the sterno-cleido-mastoid and probably also the trapezius muscles of the left side, as shown by the position of the head and face, and in the swelling and hardness of these muscles when the spasm occurs. The left side of the head is pulled down and to the left, while the face is turned upward and to the right; probably, but not certainly, the trapezius takes part in the spasm. In a paper<sup>1</sup> written by me some years since the effect of spinal accessory spasm is spoken of as follows:—

“The direction given to the face and head is deserving of brief attention. The sterno-cleido-mastoid muscle, acting singly, draws the head toward the shoulder and clavicle of the same side, while the chin and face are carried toward the opposite side, away from the affected muscle. When both muscles act together the face and head are bent forward towards the breast. The bulky trapezius has several sets of fibres, which tend to produce movements in different directions. The upper fibres draw the shoulder upward and backward, the middle directly backward, and the lower backward and downward. When the trapezius is spasmodically affected, usually the head is pulled backward and toward the side attacked while the shoulder is raised and the scapula drawn inward. The lower fibres are vanquished by the others when all are acting by the same stimulus. It happens rarely that the middle and lower fasciculi are chiefly affected, in which case the scapula is rotated and fixed firmly. If the sterno-cleido-mastoid and trapezius muscles are attacked coincidentally with spasm, the movements already described as belonging to each muscle are combined or alternate.”

The head here is pulled somewhat backward toward the side affected while the face goes toward the other side. The case then is clearly one of spasm in the domain of the spinal accessory nerve. It is clonic, or perhaps rather an admixture of clonic and tonic spasm, the contraction sometimes persisting. All cases of torticollis are by no means of this character. It is important to study closely the muscles affected, in view of the fact that operations both muscular and neural are often resorted to in these cases. Spasm of the platysma, splenius and possibly other muscles of the neck may simulate spinal accessory spasm.

Not long since, at the Polyclinic, a patient presented himself for treatment in whose case it was somewhat difficult to decide as to whether the spasm chiefly affected the right sterno-cleido-mastoid or the left splenius capitis. The chin did not turn upwards to the left as is the case in spasm of the right sterno-cleido-mastoid, but rather outward. In spasm of the splenius capitis the chin is directed rather toward the corresponding side. Dr. John B. Roberts performed a partial myotomy of the left splenius capitis, subsequently keeping the head in position by a plaster of Paris bandage. Still later, no improvement re-



sulting, the splenius capitis was thoroughly divided, but the result was still unsatisfactory. The patient improved under the administration of gelsemium. A brief account of this case has been published by Dr. Charles B. Williams in the *Medical News*, November 16, 1889. The failure of operation in this case did not, however, prove that the splenius capitis was not the affected muscle, as such operations not infrequently fail, although the local diagnosis is correct.

It might be well to give from Erb<sup>1</sup> the diagnostic symptoms in spasm of the splenius capitis :—

“In this affection the head is drawn backward towards the affected side, the chin is somewhat depressed and directed towards the corresponding shoulder, and at the spot where the splenius appears beneath the anterior border of the trapezius a hard roll can be felt. (The diagnosis of this form of spasm of the trapezius is founded on the fact that in this last the head is rotated toward the opposite side. In spasm of the sterno-cleido-mastoid the chin is raised and rotated toward the opposite side, while the mastoid process is drawn forward and downward.) This spasm is for the most part of a tonic character (with remissions and occasional spasmodic contractions (Erb), or appears in the form of a permanent contracture (Duchenne).”

The swelling of the muscle spoken of above could be felt in the case treated by Dr. Roberts and myself. In spasm of the obliquus capitis inferior, according to the same authority :

“Since the action of this muscle when in a state of spasm causes horizontal rotation of the head, the head is either rotated intermittently (*tic rotatoire*), or (where the spasm is tonic in character) persistently around its vertical axis, without any elevation of the chin or depression of the mastoid process. Clonic spasms of this muscle are a very burdensome evil, the patient being obliged to fix the head or to replace it in its natural position with the hands if he wishes to look at a fixed object or to speak. He may also be observed to correct the oblique position of the head with the hand when walking.”

A neurasthenic patient, for many months under my care, whenever much excited or depressed was liable to violent attacks of *tic rotatoire*. Her head would be rotated horizontally with great rapidity and force, the spasm sometimes being simply this form of motion, and at others accompanied by a rapid spasmodic crossing of the arms, and occasionally by movements of the legs and body. I have known this distressing rotatory spasm to be kept up for three hours. During the attack the patient remained clear-headed, and, considering the violence of the movement, comparatively placid. Sometimes the spasm could be stopped or abated by forcibly holding the head ; at other times this procedure would lead to greater violence of action in the trunk and limbs. The patient would sometimes converse during the continuance of the spasm, the rotation diminishing a little while she was talking. Strong mental impressions were very effective both in inducing and stopping the spasm. When it had once occurred it had a tendency to recur about the same time the following day ; and this could often be prevented by giving a nerve tonic or other medicine, with a positive assertion that it would prevent the attack. Cases of this kind, however, due to general nervous impression, are very different from the form of persistent local spasm in our patient. A local irritative lesion of some kind is



doubtless here present, and must be remedied or removed before we can hope for an abatement or cure of the affection.

Spasm in the domain of the spinal accessory nerve may be due to at least half a dozen differently situated irritative lesions, namely : (1) A lesion in the spinal cord anywhere above the fifth or sixth cervical segment ; (2) An intra-spinal but extra-medullary lesion—of membranes, bone or nerves—in the upper portion of the vertebral canal ; (3) A lesion of the oblongata or floor of the fourth ventricle ; (4) A lesion of the main trunk of the accessory nerve as it passes downward to the sterno-cleido-mastoid and trapezius muscles ; (5) A lesion of any of the nerves which anastomose with the spinal accessory and are closely connected with it in the spinal cord ; (6) A lesion of the cortical centres which preside over lateral deviation of the head.

I cannot go into an elaborate discussion of the position of the lesion in this case, but dismissing with a few words the consideration of its possible positions, I will direct attention briefly to what seems to be the most reasonable assumption. It is not at all probable that we have either an intra-spinal or pons-oblongata lesion. Associated symptoms of such an affection are absent ; such, for example, as an involvement of the nerves and muscles of the upper limbs, respiratory and cardiac phenomena, etc.

It is well known that the physiologists have defined areas in the brain cortex which are known to preside over movements of the head. Ferrier, Beever and Horsley, and Horsley and Schäfer particularly, have studied these centres. According to Beever and Horsley the head moves in one of the following modes or in combinations of the same : (a) Simple horizontal rotation to the opposite side. (b) Rotation with elevation of the muscle. (c) Rotation with abduction of head to the (opposite) shoulder. These observers also found that although movements of the head and eyes are usually simultaneous, that this is not always the case, and that by irritation of certain isolated cortical areas movements of the head alone could be produced. It follows that from cortical irritation we may have a monospasm in the form of involuntary movements of the head either with or without simultaneous action of the eyes. The traumatism may have caused the rupture of intra-cranial vessels at any position within the skull, scattered small hemorrhages being of somewhat frequent occurrence in violent concussion of the head without fracture. In this patient, however, we have positively no symptoms or indications of a lesion of the brain cortex unless it is the spasm. Most forms of cortical monospasm—of Jacksonian epilepsy, in other words—occur as occasional, although it may be frequently repeated, attacks of local spasm, in which, while the spasm usually begins with a signal symptom in one part, it just as commonly radiates until a number of muscles are involved in a serial order. The phenomena in this case are not those of a cortical epilepsy with this signal or initiatory symptom and succession of spasmodic movements, due, when present, to the radiation of the irritative impression from the seat of lesion to neighboring districts of gray matter in the brain rind. We have here a persistent, or, at least, a persistently recurring spasm always strictly confined to the same muscles. The view of cortical irritation must not, however, be overlooked in these cases, and in time we will



probably obtain exact points for the differential diagnosis of lesions situated in the half-dozen different places to which I have referred.

It is highly probable that the spasm in this case is due either to direct lesion of the accessory nerve, or to reflex irritation from some anastomosing sensory nerve.

A view of the causation of this spasm has suggested itself to me, one which may give the clue to its proper explanation and treatment. This is, that the spasm is reflex and in this particular case due to injury and subsequent inflammation of either the major or minor occipital nerve. If this be a correct supposition, then treatment, whether counter-irritative or operative, should be directed to the nerves which are the source or focus of irritation rather than the motor nerves which transmit this irritation to the muscles affected by the spasm. Both the occipitalis major and minor have close connections with the spinal accessory nerve, and are also topographically in close relation, the former with the trapezius and the latter with the sterno-cleido-mastoid muscles. Both the sterno-cleido-mastoid and the trapezius muscles have their main nerve supply from the second and third cervical segments. The occipitalis major nerve is the internal branch of the posterior division of the second cervical nerve; and the occipitalis minor also arises from the second cervical nerve. The occipitalis major nerve pierces both the complexus and trapezius muscles near their cranial attachments. The occipitalis minor in its course curves around the posterior border of the sterno-mastoid, and then ascends along the posterior border of that muscle for some distance. Both of these nerves are, therefore, closely connected both inside and outside of the spinal canal with the nerve supply to the sterno-cleido-mastoid and trapezius, and, as well as having some direct anatomical relations with the muscles themselves, possibly supply them with some filaments. The motor nerve supply from the occipital nerves is also such as to show how their irritation might give rise directly or by anastomosis to varying spasmodic phenomena. The posterior division of the second cervical nerve, from which the major occipital originates, supplies the inferior oblique muscle; and the external branch of the major occipital joined by the external branch of the posterior division of the third cervical nerve, supplies the complexus, splenius and trachelo-mastoid muscles.

The spinal portion of the accessorius nerve, after giving several branches to the sterno-mastoid during its passage through this muscle, joins in its substance with branches from the second cervical, which also supply this muscle.

"Beneath the trapezius it joins with the third and fourth cervical nerve to form a sort of plexus, from which fibres are distributed to the muscle, and in the occipital triangle between the two muscles it joins with the second and third cervical nerves and assists in the formation of the cervical plexus." (Gray).

The great occipital nerve supplies the skin corresponding with the upper part of the occipital bone and adjoining part of the scalp. The small occipital supplies the skin behind the ear, and this area is directed in a pointed shape towards the crown of the head.

The history is that our patient was thrown from a wagon and landed on her head and back, after which accident her trouble began. It is clearly then



of traumatic origin. As we examine by pressure the back of her head we cause no pain in the mastoid region, nor in the back of the neck, but pain is elicited by pressure at a point already mentioned to the left and above the occipital protuberance, the spasm being at once precipitated by this procedure. By examining an atlas of the cutaneous nerve supply, as, for instance, that of Heiberg, it will be seen that the place of greatest tenderness in this patient is in the area of distribution of the occipitalis major nerve, or about the border line between the occipitalis major and minor districts. It is likely that we have here some local inflammatory trouble involving the sensory nerves, whatever other tissues may be included in the disease. This being the case, it will be easily comprehended what an intense source of reflex irritation such a lesion may be. One of the main objects of treatment should be to subdue this local inflammation.

In all probability this patient can be cured, but the task is by no means easy. It will require great perseverance both on her part and that of the physician, at least such has been my experience in other cases. Operation has been frequently resorted to for such cases and most frequently without success. In October, 1888, Dr. F. X. Dercum reported three cases of spinal accessory spasm unsuccessfully treated by excision of the nerve, and at the same time I reported another unsuccessful case. The accessory nerve has been cut, resected and stretched by many surgeons, occasionally with success but more often with failure. The muscles affected have sometimes been severed, but again most frequently without success. In fact this patient had her sterno-cleido-mastoid muscle cut some months since without any relief. The operation that would seem to offer the most hope of success in this case, if surgical procedure is resorted to at all, would be excision of the portions of the occipitalis major or minor nerves, which are apparently diseased, and if the course of treatment on which she is now placed does not succeed this operation will be performed. Treatment by electricity offers some hope, but is not commonly successful. The best method is the direct application of a moderately strong galvanic current to the nerve supplying the muscles affected by the spasm; by preference, the anode or positive pole over the nerve, and the cathode to some indifferent part. The best text books on electro-therapeutics and nervous diseases, however, contain directions as to the various methods of using electricity. Massage and gymnastic treatment have been highly lauded.

The patient seems to be improving, although she is far from well, on the following course of treatment: Internally she is taking the fluid extract of gelsemium. The treatment was begun by the administration of five drops three times daily, increasing the dose one drop daily, until now she is taking 18 drops three times a day, and is just beginning to experience physiological effects from the drug. Gelsemium of the shops is an uncertain preparation, but the drug is an efficacious anti-spasmodic if the particular specimen used is reliable. Iodide of potassium, grains 10, and bichloride of mercury, grain 1-32, and the compound sumbul pill have also been given. This pill, which contains arsenious acid, sulphate of iron, asafoetida, and extract of sumbul, is a powerful nervine and general tonic. Three times a week the actual cautery has been used, the burns being made by a small olive-shaped cauterizer, heated to



whiteness, and applied to the back of the neck and the left occipital region. Small superficial burns are to be preferred and have been used. The actual cautery is one of the most successful forms of treatment for this and similar forms of local spasm. It probably acts in a two-fold manner—as a powerful counter-irritant, and as an equally powerful counter-reflex. The salicylates internally, and hypodermic injections of morphia and atropia locally, are also valuable therapeutic measures.

---











